

CLAIM AMENDMENTS

1 – 49. (Cancelled)

50. (Previously presented) An article, comprising
a composite portion comprising hard constituent particles in a binder;
an etched surface region substantially free of eta phase, the etched
surface region comprising substantially intact hard constituent particles and voids
between the substantially intact hard constituent particles, wherein the voids extend
to the composite portion and to a depth of between 3 microns and about 15 microns;
and
a wear resistant coating on the etched surface region and disposed in the
voids.

51. (Cancelled)

52. (Previously Presented) The article of claim 50, wherein the composite
portion comprises at least one of cemented carbides and cermets.

53. (Previously Presented) The article of claim 50, wherein the hard
constituent particles comprise one or more material selected from the group consisting
of:
a carbide material selected from the group consisting of tungsten
carbide, titanium carbide, tantalum carbide, niobium carbide, vanadium carbide,
chromium carbide, molybdenum carbide, and iron carbide;
a carbonitride of a refractory metal;

a nitride of a refractory metal;

a carbonitride of an element selected from the group consisting of W, Ti, Ta, Nb, V, Cr, Mo, and Fe;

an oxide of an element selected from the group consisting of aluminum, zirconium, and magnesium;

a boride of an element selected from the group consisting of aluminum, zirconium, and magnesium;

a material comprising molybdenum; and

a material comprising tungsten.

54. (Previously Presented) The article of claim 50, wherein the hard constituent particles comprise tungsten carbide and the binder comprises cobalt.

55. (Previously Presented) The article of claim 50, wherein the binder comprises one or more materials selected from the group consisting of cobalt, nickel, iron and elements within Group VIII or the periodic table, copper, tungsten, zinc, and rhenium.

56. (Currently amended) The article of claim 50, wherein the coating enhances the wear resistance of the article and is comprised of one or more materials selected from the group consisting of TiC, TiN, TiCN, ~~diamond~~, ~~Al₂O₃~~, TiAlN, HfN, HfCN, HfC, ZrN, ZrC, ZrCN, Cr₃C₂, CrN, and CrCN.

57. (Previously Presented) The article of claim 50, wherein the coating is an MT-milling coating.

58. (Previously Presented) The article of claim 50, wherein the article is selected from the group consisting of metal cutting inserts, dies, punches, stamps, threading devices, blanking devices, milling devices, turning devices, drilling devices, boring devices, mining bits, drilling bits, tricone bits, percussive bits, road planing devices, wood working bits, wood working blades, drawing devices, heading devices, back extrusion devices, rod mill roll devices, and wear parts used in corrosive environments; and the coating enhances the wear resistance of the article.

59. (Previously Presented) An article, comprising:
a composite portion comprising hard constituent particles in a binder;
an etched surface region substantially free of eta phase, the etched surface region comprising substantially intact hard constituent particles and voids between the substantially intact hard constituent particles, wherein the voids extend to the composite portion to a depth of between about 3 microns and about 15 microns;
and
a wear resistant multi-layer insert coating on the etched surface region and disposed in the voids, wherein the wear resistant multi-layer insert coating comprises two TiN layers of approximately 1 micron with a TiCN layer of approximately 3 microns disposed between the two TiN layers.

60. (Cancelled)

61. (Previously Presented) The article of claim 59, wherein the composite portion comprises at least one of cemented carbides and cermets.

62. (Previously Presented) The article of claim 59, wherein the hard constituent particles comprise one or more material selected from the group consisting of:

a carbide material selected from the group consisting of tungsten carbide, titanium carbide, tantalum carbide, niobium carbide, vanadium carbide, chromium carbide, molybdenum carbide, and iron carbide;

a carbonitride of a refractory metal;

a nitride of a refractory metal;

a carbonitride of an element selected from the group consisting of W, Ti, Ta, Nb, V, Cr, Mo, and Fe;

an oxide of an element selected from the group consisting of aluminum, zirconium, and magnesium;

a boride of an element selected from the group consisting of aluminum, zirconium, and magnesium;

a material comprising molybdenum; and

a material comprising tungsten.

63. (Previously Presented) The article of claim 59, wherein the hard constituent particles comprise tungsten carbide and the binder comprises cobalt.

64. (Previously Presented) The article of claim 59, wherein the binder comprises one or more materials selected from the group consisting of cobalt, nickel, iron and elements within Group VIII or the periodic table, copper, tungsten, zinc, and rhenium.

65. (Previously Presented) The article of claim 59, wherein the article is selected from the group consisting of metal cutting inserts, dies, punches, stamps, threading devices, blanking devices, milling devices, turning devices, drilling devices, boring devices, mining bits, drilling bits, tricone bits, percussive bits, road planing devices, wood working bits, wood working blades, drawing devices, heading devices, back extrusion devices, rod mill roll devices, and wear parts used in corrosive environments; and the coating enhances the wear resistance of the article.